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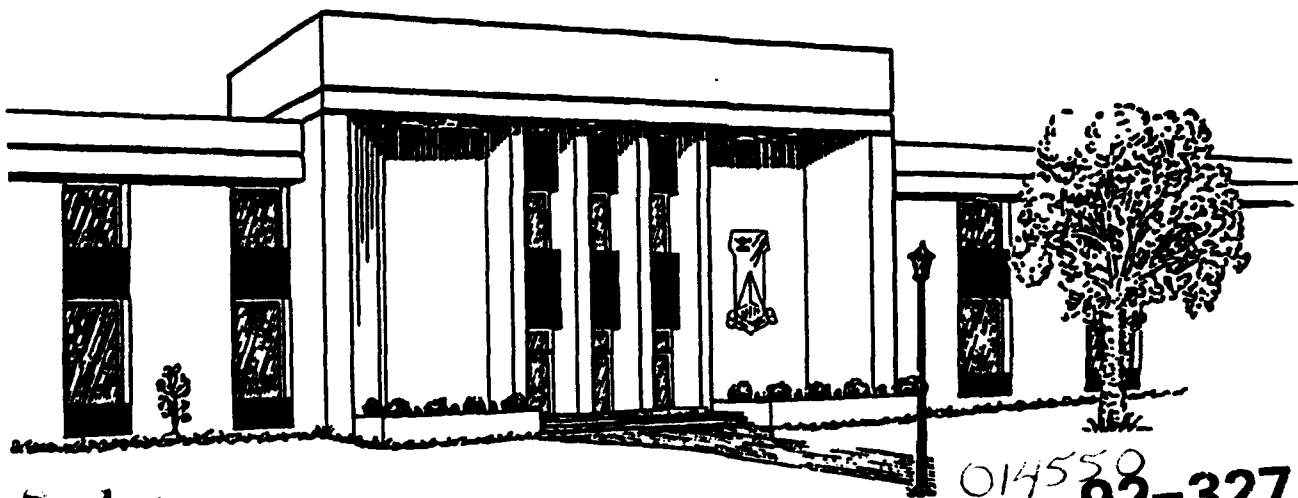
A PARADIGM SHIFT IN AIR FORCE MEDICINE

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A PARADIGM SHIFT IN AIR FORCE MEDICINE

BY

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A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE CURRICULUM
REQUIREMENT

ADVISOR: COLONEL RAYMOND S. CRAWFORD III

MAXWELL AIR FORCE BASE, ALABAMA

MAY 1992

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ABSTRACT

TITLE: A Paradigm Shift in Air Force Medicine

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Air Force medicine has been utilizing a quality assurance (QA) program for little less than a decade. The momentous success of total quality management (TQM) in the industrial business is starting to spill over into the American medical business in the form of continuous quality improvement (CQI). A QA program is a mandated, externally driven reactive program which focuses on the provider and who did it. CQI in contrast is proactive, internally driven, fosters participation and focuses on process improvement and what is wrong. QA programs are set up to identify those individuals who deviate far from the norm. CQI focuses on the norm and continuously improves the norm. My thesis is that Air Force medicine must transition from QA to CQI.

BIOGRAPHICAL SKETCH

Colonel Edward A. Miller, USAF, MC, FS, is certified by the American Board of Family Physicians. He has held command positions at the USAF Clinic Rhein Main, AB, Germany and USAF Clinic Ankara, AS, Turkey. His past assignment was as Director of Hospital Services, Deputy Commander USAF Medical Center, Malcolm Grow, Andrews AFB, Maryland. In addition to other duties, Colonel Miller served as chairperson of the Quality Assurance Committee at the medical center. He has been nominated to assume the position of Director of Professional Affairs, Office of the Assistant Secretary of Defense for Health Affairs.

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CHAPTER I

CONTINUOUS QUALITY IMPROVEMENT PARADIGM SHIFT

Continuous Quality Improvement (CQI)

A physician in a U. S. Air Force hospital correctly diagnosed and treated a patient he admitted with chest discomfort. While writing the admission orders, the physician forgot to include a pain medication order. This caused a delay at the nursing station in obtaining the patient's pain medication, prolonging the patient's discomfort. Later, the physician ordered blood test, however, he failed to properly specify the type of test he desired. The blood test had to be redrawn. On the following day the physician ordered an X-ray, but again failed to clearly specify exactly what he desired. *This caused the patient to have to return to radiology for repeat exposures.* On the day of discharge, a dermatology consultant, ordered several days earlier, arrived to evaluate the patient before he left the ward after discharge by the primary physician. This resulted in a delay in transferring a patient's admission from the emergency room (ER) where each of its beds were full, delaying care in the ER and, in addition, delaying the patient and his family, who had come to take the patient home.

In the above example, the physician made the correct diagnosis, treated the patient appropriately for the disorder, and his documentation was in excellent order. But, how would you rate the quality of care given to this patient? What about the efficiency of this medical facility?

The physician's diagnostic acumen and treatment skills are the focus of the traditional quality assurance (QA) program in most of our Air Force (AF) medical treatment facilities. However, suboptimal care can be rendered, as illustrated above, at any step of the care process, from the admission to the discharge of in-patients and from the scheduling of an appointment to the completion of the follow-up for out-patients. Unfortunately, very few of our AF medical treatment facilities look closely at the satisfactory completion of every step of these important processes.

Quality is rapidly becoming the standard for excellence in the health care field. Concern about competitiveness has initiated a renewed focus on quality products and services, especially in the automobile industry where the U. S. has lost its competitiveness to the Japanese. George H. Labovitz, a total quality expert, believes that there will soon be a revolution in the health care business that will utilize as a standard for excellence, quality.¹

Labovitz defines this revolution as the philosophy of total quality management (TQM), which most of us in AF medicine more frequently refer to as continuous quality improvement (CQI), a process of looking at each critical system in an organization. The paradigm shift is not the use of inspection to inspect out defects, but to build quality into the system in the beginning. TQM or CQI affects the entire organization, assessing the process within the organization which leads to problems.

In the example given earlier, the traditional quality assurance approach may fault the patient's primary physician for having the blood work redrawn, for having the X-ray retaken, for forgetting to order pain medication; and fault the dermatologist for taking so long to see the patient on consultation. However, faulting these two physicians is only a short-term solution; and discovering what or who is at fault does not always solve the problem for the long-term. In CQI, the paradigm shift requires that the entire process be evaluated. Was there a communication problem with the physician's orders for X-rays and blood work? Are the pain medications a routine order given to almost all the patients on this ward? If so, should the staff consider making pain medication orders part of a standard overprint, and perhaps consider including in this overprint of standard orders X-ray and blood orders? Was the dermatologist informed of the consultation in a timely manner? The important part of the CQI process is involving a process action team (PAT) of not just the senior management of the facility, but including the people who own the process, those involved in the problem. The process owners should be given the responsibility and the authority to implement the necessary changes to improve the process continuously.

Much of the health industry is endorsing the industrial quality model TQM. Philip Crosby, a quality consultant for industry, argues that TQM saves companies money by producing a quality product or service that conforms to customers' expectations and is defect-free. By implementing TQM, money is saved by not doing work over again and by investigating customer requirements and meeting

their expectations. Companies save in developmental, retailing and marketing cost by "doing it right the first time."²

Crosby has estimated that the average company loses approximately 20 percent of its corporate earnings on doing rework.³ Brent James, Director of Medical Research for Intermountain Health Care, estimated that with the application of TQM principles, from the industrial quality model to health care using CQI principles with the minimization of complications, inappropriate test and procedures as well as doing rework, health cost would be 20 to 40 percent cheaper.⁴

The cost saving, considering that in 1991 health care cost Americans 700 billion dollars, would be approximately an unbelievable quarter of a trillion dollars. We are faced with the possibilities of an amazing opportunity in medicine, at cost saving, by eradicating non-real work.

W. Edward Deming

Much of the manufacturing successes of the Japanese has been accomplished through the use of a TQM system, brought to Japan by W. Edwards Deming in the early 1950s. At that time TQM principles were rejected by America because, as Deming now 92 years of age explains, in the post-war years North America was the only source of manufactured goods available in the entire world; and in a sellers market, almost any type of management system would be successful. American industry peacetime production of consumer goods had no competition. The TQM technique taught by Deming, a respected statistician, was

regarded at that time as time-consuming and not needed. But in the 1980s, as the world and U. S. customers turn away from American products because of inferior quality, America has turned to Deming's method which emphasizes improvements in quality and production by removing special causes of trouble, one at a time, if necessary; thus, eliminating the expense of redoing work and throwing poor quality products out.

The Deming management method focuses on fourteen principles:

1. Create constancy of purpose for improvement of products and services.
2. Adopt the new philosophy.
3. Cease dependence on mass inspection.
4. End the practice of awarding business on price tag alone.
5. Improve constantly and forever the system of production and services.
6. Institute training.
7. Institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations, and targets for the work force.
11. Eliminate numerical quotas.
12. Remove barriers to pride of workmanship.

13. Institute a vigorous program of education and retraining.

14. Take action to accomplish the transformation.⁵

Summary

The objective of this treatise is to assist the senior leadership of the USAF and AF Medical Service in accomplishing the CQI paradigmatic shift necessary to even improve further the quality of care at each USAF medical center, hospital and clinic. First, the transition of the paradigm shift from quality assurance (QA) to continuous quality improvement (CQI) will be explored. Next, a discussion of an agenda for change along with several success stories. This will be followed by a discussion of the use of some of the methods and the tools of CQI. Lastly, there will be a discussion of the recommendations and conclusions for implementing the paradigm shift to CQI in the AF medical treatment facilities. This treatise is the result of an exhaustive review of TQM, CQI literature, multiple discussions with QA and CQI medical treatment facility experts, valuable assistance from the AF Quality Center at Air University,⁶ and almost two decades of personal professional experience in USAF medicine.

NOTES

CHAPTER I

1. George H. Labovitz, "The Total Quality Health Care Revolution," Quality Progress, September 1991, p. 45.
2. James B. Couch, Health Care Quality Management for the 21st Century, Tampa, Florida: American College of Physician Executives, 1991, p. 394.
3. Ibid.
4. Ibid.
5. Mary Walton, The Deming Management Method, New York, The Putnam Publishing Group, 1986, pp. 55-86.
6. The Air Force Quality Center has a mission to provide AF commanders and their organizations with concepts, methods, tools, and advice for attaining a total quality culture. Its objective is to become the AF focal point for TQM. For more information, you should call: Commercial (205) 953-3303; DSN 493-3303; or write, Air Force Quality Center, Maxwell AFB, AL 36112

CHAPTER II

THE PARADIGM SHIFT FROM QUALITY ASSURANCE TO CONTINUOUS QUALITY IMPROVEMENT

Quality Assurance

The AF Surgeon General (SG) established a Quality Assurance Office in 1983 within the SG headquarters, designated HQ USAF/SGPQ, to enhance the AFSG quality assurance (QA) program. His staff was directed to (1) develop a comprehensive QA directive, (2) place greater emphasis on credentialing, and (3) improve QA mechanisms, such as incidence reporting and QA committee management, to enhance patient safety. The Joint Commission on Accreditation of Hospital (JCAH) and the Department of Defense standards were included in the QA regulation AFR 168-13, published 31 May 1984. This QA program was designed with the assumption that AF practitioners were qualified practitioners who practiced quality medicine; however, the added QA methods were required and implemented to better document and also monitor practitioners' efforts. In fact, the documentation demonstrated that in most cases the quality of care, when compared to the civilian medical community, was superior. This assessment, applying national QA standards, was supported by JCAH surveys. And in addition, the number of medical malpractice claims filed against AF physicians per 100 when compared to civilian data in the early and mid eighties was significantly lower. In fact, the rate was steadily decreasing while the civilian rate was increasing.¹

Comprehensive QA programs were established in every AF medical facility as a defensive response to directive requirements of external agencies such as the JCAH, Congress and in reaction to increase liability of every medical facility in America. CQI author, Dr. Richard E. Thompson, states that there is no convincing evidence to suggest that QA had a positive impact on health care in America.² According to Dr. Kathleen Jennison, a CQI expert, practitioners, because of fear and resistance to QA, undermine the success of the QA inspection-oriented program which is already thwarted by heavy regulatory burdens and limited measurement technology.³ Restricting QA programs to provider incriminating endline inspection has bred over the years the present climate of defensiveness, adds Dr. Jennison.

There is a rush to master CQI at most AF medical treatment facilities (MTF), in many cases, driven by guidance from the wing or major command level; but, more importantly, driven by a desire to catch hold of a vision that breaks away from the current climate of defensiveness and moves to a more proactive participatory CQI approach. Most medical personnel have already become familiar with the success of TQM in other industries, bringing about mark improvements in quality, leading to lower cost by reducing waste and rework. In manufacturing, defective parts from an assembly line are pulled off the line, detected by massive inspection, and become scrap. In the health care system, defects cannot become scrap for they are our patients. If a patient with streptococcal pharyngitis is treated in the pediatric clinic with throat lozengers and

cold medicine, this patient treatment failure will return in about 48 hours. Besides the dissatisfaction of the patient's parents with the poor care, there is the cost of time and expenses of not doing things right the first time, the cost of fixing the mistakes. CQI guides the entire system to look at the process and improves it, improves it, and improves it still further. However, QA will not become completely obsolete because a QA system is needed to detect that one-in-a-thousand pediatric patient who returns within 48 hours with the same problem for review. Even Florida Power and Light and Xerox Corporation, where the author visited in 1988, both internationally noted for their TQM programs, have a QA department.

Most of the approximately 120 QA professionals in each of our AF medical facilities have made significant contributions in obtaining quality health care over the past decade. They have, in addition, provided through their hard work a foundation for a paradigm shift in an effort to do even better. Dr. Kathleen Jennison has helped us appreciate, however, how traditional QA differs from the quality management approach. Refer to Table 1.⁴ Even though many AF medical facilities will maintain both a QA and a CQI program for several years, ultimately Dr. Jennison believes QA will transition into a quality measurement and analysis CQI function within an organizational quality system. In other words, QA will probably transition over years into a CQI system throughout the MTF from top down, and eventually involve all aspects of the AF medical system.

ISSUES	QA	CQI
Motivation	Mandated	Inspired
Customers	JCAHO HSMI	Many, Internal and External
Focus	On Individuals	On Processes
Method	Clinician Inspection	Process Improvement
Process Analysis	Superficial	Statistical Based
Use of Statistics	Limited	Pervasive
Relationship to Cost	Independent	Integrated
Scope	Selected Departments	Entire Organization
Impact	Intangible	<i>Felt Top Down</i>

TABLE 1: Quality Assurance vs. Continuous Quality Improvement

Motivation

Addressing a number of issues from Dr. Jennison's table to clarify and compare the traditional QA and quality management, CQI approach, begins with what motivates people to be involved in the respective program. In a QA program one is not overwhelmed with enthusiasm and self-motivation as is the case in a CQI program. The QA program tends to be resisted and avoided, if possible, by the staff. On a visit to an AF clinic in the Southeast, the author, as was the case for each visitor, was given a copy of the book, The Deming Management Method⁵ and presented the standard CQI indoctrination for that clinic. One sensed a CQI "movement" almost evangelical in nature as everyone from top to bottom was motivated personally to participate. Most of the staff caught up in the excitement of CQI was motivated to read this book because they did not want to be left out.

Customer

A second significant contrast involves the notion of the customer. A customer can be defined as one who is the recipient of goods or services of a customer supplier, who supplies the customer. The customers of a MTF include the base community, made up of active duty members and their dependents; the local commanders; and the civilians who work on the base. Outside of the base community, the customers include the retirees and their dependents, the Health Services Medical Inspection (HSMI) team, higher headquarters, and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Each of these customers is external to the medical facility. However, internal to the

medical facility the providers, nurses, administrators, pharmacists, laboratory officers, dentist and medical technicians includes the customer-suppliers at the medical facility. In a traditional QA program the program is focused on the regulatory requirements of AF regulations and JCAHO making the HSMI and JCAHO the principal customers. CQI quality management programs focus on meeting reasonable expectation of the customers and the customers suppliers. If the pharmacy devises a method which allows the providers to decrease the number of prescriptions written, the pharmacy in this relationship becomes the supplier and the provider the internal customer, being internal to the medical facility.

Focus

A third significant contrast between the QA and CQI programs is the focus of the collection and analysis of the data. The traditional QA program focuses on documenting occurrences of poor outcomes and care. For instance, in the earlier example of the pediatrician, the return of a patient to the clinic in 48 hours with the same complaint is tallied as a negative incident against the physician. This traditional system focuses on documenting who did it, not on the process improvement. CQI focuses on detailed process analysis and continuously trying to improve the process. Would a protocol where every pediatric patient with a sore throat has a throat culture by one of the ancillary staff before being seen by the provider help the overwhelmed pediatrician on an extremely busy clinic day?

At USAF Medical Center, Scott AB, Illinois, where they are committed to applying CQI techniques by focusing on the process, there is a CQI story which was presented at the Juran Institute's Ninth Annual Conference on Quality Management.⁶ It begins with multiple complaints from patients not able to obtain routine pap smear test. The hospital staff thought there were several reasons for the lack of appointments, a shortage of providers, the lack of clinic space to run multiple rooms at once, and an overwhelming number of acutely ill patients who had priority over routine patients. The hospital Executive Committee decided to apply quality improvement process, appointing their first process improvement team (PIT) calling it "The Women's Healthcare Team." After identifying the critical aspects of the process, they were able to focus on improving the process which consisted of relieving the providers of some of their administrative duties which prevented them from seeing more patients. Thus, a nurse manager position was established in the department conducting administrative duties previously accomplished by the provider, such as advising patients of test results, referring patients to other specialty providers or for additional procedures, and ensuring appropriate filing of paper work. The new nursing manager position gave the providers more time for direct-patient care.

Methods

A fourth significant contrast between QA and CQI is in the methods used to approach the raw data generated by the respective programs. Dr. Jennison believes that the traditional QA programs approaches deficiencies only at a level

of identifying and categorizing deficiencies, but failing to explore chances for improvement through analysis of process failure.⁷ As in the example of the pediatrician, the outcome was well documented, however, the process, how and when throat cultures are done, was not analyzed. Thus, the opportunity for improvement, by understanding the basic causes of throat cultures not being done in the pediatric clinic and why this occurs, is lost, admitting that errors in clinician judgment cause the problem and occasionally they will reoccur. The traditional system, therefore, would try their best to reeducate the pediatrician and, in addition, put a little fear in each of the pediatric provides at their next departmental QA meeting.

Process of Analysis

A fifth important difference between traditional QA and a quality management experimental approach is in the process of analysis. The methods as described are not the same. The QA system strives to constantly achieve an ideal standard. For example, all providers will insure that all patients with sore throats when indicated has a throat culture. The processes that analyzes what contributes to the clinician decision to perform the procedure, or if the ancillary staff insures that the rooms are stocked with the proper tools for examination and culture, or that the culture is done prior to having the patient seen by the provider is not addressed. The success of the AF medical center in freeing up provider time in the OB-GYN clinic is an excellent example of how data collection and analyzes of the process improve performance. CQI methods allowed the owners

of the problem, the technicians, nurses and providers in the OB-GYN clinic to study how the process performed as it did, in order to improve the design.

Statistics

A sixth important contrast between QA and CQI is significant. This involves the pervasive use of the statistical approach to assess and analyze data from evaluation of the process in a quality improvement, CQI system. Traditional QA programs have a limited use of statistic. The literature has described specific tools for the analyzes of CQI data gathered on a process. Chapter IV of this treatise will cover several essential statistical tools of CQI developed in TQM programs in industry in order to apply scientific methods to quality management to solve problems with the process.

Cost and Quality

A seventh significant contrast in the approach of the traditional QA program and the process of CQI relates to cost and quality. Traditionally, the practitioner feeling an ethical responsibility, according to Dr. Jennison, maximizes patient benefit without considering the cost.⁸ QA programs did not place the cost of care into this equation. CQI, however, maintains that when wasted resources are minimized fewer corrective actions need to be taken because errors are lower. Thus, the quality of care is high and the cost will be lower. In other words, quality, if you take the time to analyze this process in a scientific manner and get it right the first time, is cheaper.

Scope

The eighth area of comparison is the scope of a quality program. In a major AF medical center in the east, the QA program functions at a departmental level under the Director of Hospital Services, the infection control program functions with oversight from the infection control committee, the drug utilization review program functions with oversight from the pharmacy and therapeutics committee, and the risk management program functions under the hospital administrator. Each program functions independently of the others, coming together at the directorate level through the QA committee. Future quality improvement programs will integrate these functions with processes expected to cross departmental lines involving practitioners and ancillary staff at all levels. No one department in most cases possesses a process that does not cross departmental lines. The solution to improving the process will, in numerous cases, involve the entire organization.

Impact

Finally, the ninth area of comparison is the impact which, in the case of CQI, is not distant but tangible. CQI will become the routine, rewarding to those who work on improving the processes, as well as those who are served as the customer. All will be affected by and aware of the agenda for quality improvement. CQI is evolving rapidly in the AF and will more than come and go with the next HSMI and JCAHO survey.

Bad Apples

It is widely accepted throughout the AF that TQM, or CQI in the medical world, is the quality program for the future. But, frequently in AF medical treatment facilities, the question being asked is, Is the ten-year-old QA system in all AF medical facilities a truly inferior, outdated inherently bad program? Can we live with it? An editorial in the New England Journal of Medicine by Dr. Donald Berwick, a quality improvement guru, offers some insight on QA from his point of view. Dr. Berwick states that QA relies on a system of inspection to improve quality. He adds that:

We may call it the theory of bad apples, because those who subscribe to it believe that quality is best achieved by discovering bad apples and removing them from the lot. The experts call this mode "quality by inspection,"They search for outliers, statistics far enough from the average that chance alone is unlikely to provide a good excuse. Bad apples theorists publish mortality data,...and fund vigilant regulators. Some measure their success by counting heads on platters. ...When quality is pursued in the form of a search for deficient people, those being surveyed play defense. They commonly use three tactics: kill the messenger...the inspector...distort the data or change the measurements (whenever possible, take control of the mechanisms that may do you harm), and if all else fails, turn somebody else in and divert....attention.⁹

Dr. Berwick maintains that in a QA system the philosophy is that people are to blame for problems with quality as a result of their incompetence, or insufficient caution. And, threats or deterrence can be used effectively to improve the

providers' attitudes and intentions, using reward or punishment to make them do the right thing.

Dr. Berwick contends that the theory of bad apples through the present QA system has let American industry down, resulting in no video-cassette recorders or compact-disc players being produced by an American company. And, explains why Japan produces copies at half the cost of those produced by Xerox with only one-thirtieth the number of defects.¹⁰

Summary

Thus, summarizing this chapter, traditional QA techniques focus on the provider as the primary object of their review, while CQI focuses mainly on the processes of care. QA is interested in who did it; where in CQI, the question asked is how is it done and what can I do to make it better? QA looks for deviations from the norm, reviewing for outliers; whereas CQI is concerned about outliers and special variation, but it is more concerned about the mean and how to improve it in a continuous mode. In CQI, like QA, stability is important; but in CQI, the process is driven to achieve significant breakthroughs. QA programs involve the professional staff; however, CQI involves individuals from various functions from the top down who has first-hand knowledge of the process. Quality reports prepared by QA is subjective with phrases like "meets standards" and is prepared frequently by QA staff members. In a CQI system, the quality reports are more objective and far more analytical, written by process team members from each department. Senior management regard quality management as their primary job,

not just a QA specialized staff function to volunteer to help out when asked. Therefore, by now a sense of a mandate for a paradigm shift from QA to CQI can be appreciated.

NOTES

CHAPTER II

1. Captain Jackie W. Smith, Colonel Thomas E. Schwark and Captain Kevin P.N. O'Shea, "Quality Assurance in the USAF Medical Service: The Big Picture," USAF Medical Service Digest, Spring 1985, p. 6.
2. Richard E. Thompson, "From Quality Assurance to Continuous Quality improvement," Physician Executive, September-October, Vol. 17, Issue 5, p.3.
3. Kathleen Jennison, Edited by James B. Couch, Health Care Quality Management for the 21st Century, Tampa, Florida: American College of Physician Executive, 1991, p. 446.
4. Ibid., p. 449. Table 1 is a significantly altered version of Jennison's Table 1, in her approach to the difference between traditional QA compared to quality management.
5. Mary Walton, The Deming Management Method, New York: The Putnam Publishing Group, 1986.
6. General Paul K. Carlton, Jr., "Medical Accent on Quality," a paper presented at the Juran Institute's Ninth Annual Conference on Quality Management, Atlanta, Georgia: Juran Institute, Inc., 1991. Copies of the proceedings should be requested from Impro 91 Conference Proceedings, Juran Institute, Inc., 11 River Road, CT 06897.
7. Opt. Cit., Jennison, p. 453.
8. Ibid., p. 454.
9. Donald M. Berwick, "Continuous Improvement As An Ideal in Health Care," New England Journal of Medicine, January 5, 1989, Vol. 320, No. 1, p. 53.
10. Ibid., p. 54.

CHAPTER III

AGENDA FOR CHANGES

JCAHO Viewpoint

The JCAHO is cautiously transitioning from a total QA approach to a QA and CQI mixed approach. The JCAHO's *Accreditation Manual for Hospitals* (AMH), 1992 edition, chapter on "Quality Assurance" has been retitled to include CQI, "Quality Assessment and Improvement." New leadership standards have required each hospital Chief Executive Officer (CEO), which in the AF is the medical facility administrator, to be educated on CQI methods, published in the 1992 AMH. They will eventually require all of the senior management of the medical facility to be able to document training in CQI programs. Dr. Dennis O'Leary, President of the JCAHO, implies that the JCAHO wants medical facilities to start thinking about managing quality, using the CQI process, and encouraging medical facilities which have already initiated a CQI program. Dr. O'Leary places great importance on improving the norm of performance because there is more to be accomplished in this way as opposed to punishing the outliers. He adds that a strong data based system using appropriate performance measures will fulfill the need to identify outliers and improve the norms. Dr. O'Leary believes in the use of indicators to look at a process performance or at individual performance. Indicators can be the linkage between QA and CQI through the ten-step monitoring and evaluation (M&E) model. Dr. O'Leary suggest using indicators to look at his dimensions of quality care defined as appropriateness, effectiveness, access,

safety, continuity and patient interactions. The position of the JCAHO on CQI expressed by Dr. O'Leary is, "your commitment to TQM, CQI, whatever label you like, or just the general thought of quality improvement, ...is your choice."¹

Success Stories

In a teaching hospital in Massachusetts, the quality review board, made up of physician directors of intensive care units, as an indicator selected complications for central venous pulmonary artery catheterization. According to "QA Update" in the "Quality Review Bulletin Journal of Quality Assurance," the complication rate was greater than expected. Their complication log book provided them data inconsistent with a designated poor performance by physician. The bad apple theory in this case could not be substantial. With the help of their hospital quality improvement director, who was attempting to get their CQI program off the ground, they analyzed the procedure or process. They utilized all individuals involved in the process and used a statistical process of analysis with graphs, charts and diagrams, as well as making a site visit. Eventually they determined that the variation in the rates was a result of the positions of the beds in the units, affecting catheter placement and the differences in catheter sets being used. Thus, this was a demonstration showing that a scientific method application is essential in quality management.²

The USAF Medical Center, Wright-Patterson, was one of the six hospitals recognized by the JCAHO for serving as a role model for all hospitals throughout the nation, both military and civilian in quality management. The JCAHO praised

the medical treatment facility as a "shining example." The medical center has adopted a FOCUS-PDCA type medical model which will be described in Chapter IV. The facility introduced CQI approximately four years ago and has achieved remarkable success. For example:

- Their Pharmacy Waiting Time Process Action Team (PAT) reduces the average waiting time for prescriptions by 70 percent (51 minutes to 15 minutes) even though prescriptions increased 14 percent.
- Their Inpatient Medication Delivery PAT reduced missed medications from 84 per week to 8, while also eliminating 30 non-value added steps.
- Their Sick Call Dentistry PAT reduced the average wait for dental sick call from one hour to less than 20 minutes, and reduced the number of *unanswered phone calls* from 6,600 per day to less than 70.
- The Primary Care Clinic Appointments PAT reduced the number of complaints for appointments from 50 to 100 per day to less than one per month.
- The Emergency Room PAT reduced the number of patients leaving without being seen from 100 per month to 20. The waiting time for lab results was also reduced by 50 percent.

Navy CQI Transformation

The U. S. Navy surgeon general co-authored an article published in "Quality Progress" explaining how he institutionalized total quality management throughout the entire Navy Medical Department. Vice Admiral James A. Zimble covers how

this could help effectively utilize increasingly scarce resources, and "...address the many disaffections with the department, and...the gap between the departments' and the customers' perception of the level of health care provided."³ CQI was incorporated throughout the entire Naval medical system rather than one medical facility at a time. The system-wide CQI from top down was directed to preclude the disruption from personal transfers. However, a master CQI plan was not implemented because several of the medical facilities had already implemented their own CQI program. The Navy Medical Departments' CQI transformation was divided into six areas: training, developing an infrastructure, networking, building cultural foundations, strategic planning, and promoting system-wide congruence. Admiral Zimble makes it clear that, "headquarters...staff exist to serve its customers, the field command, not vice versa...[the] headquarters is now beginning its journey."⁴ The Admiral assesses the transformation as being "...pleased with the progress made outside...[the] headquarters,...[but] not as happy with the headquarters' culture."⁵ He believes that the most perplexing concerns are both when and how to combine QA and CQI, recognizing that they should ultimately be combined. However, for the present time, he is not prepared to combine the two.

NOTES

CHAPTER III

1. Dennis S. O'Leary, "Accreditation In The quality Improvement Mold - A Vision for Tomorrow," Quality Review Bulletin Journal of Quality Assurance, March 1991, Vol. 17, Number 3, p. 76.
2. Louise Kaegi, "Rethinking Quality - Nationally and Regionally," Quality Review Bulletin Journal of Quality Assurance, November 1990, Vol. 16, Number 11, p. 410.
3. Captain Robert K. Zentmyer and Admiral James A. Zimble, "The Journey From Bureaucracy to TQM," Quality Progress, September 1991, p. 61.
4. Ibid., p. 65.
5. Ibid.

CHAPTER IV

IMPLEMENTING A CONTINUOUS QUALITY IMPROVEMENT PROGRAM

The Hospital Corporation of America (HCA) Program

HCA, the nation's largest chain of hospitals, have adopted CQI to improve quality and productivity at the most cost-beneficial level. Their hospital-wide CQI process was offered to each of its HCA affiliated hospitals on a voluntary basis with about 75 hospitals adopting the model. The HCA has over five years of experience in CQI. R. Paul Duncan, Eugene C. Fleming and Todd Gallati published some of the HCA experiences in a 267-bed hospital in Gainesville, Florida. They explain that the hospitals in the program receive substantial corporate support in the form of educational programs, materials, consultation and technical assistance. The educational programs held at the corporate headquarters are provided on a regular basis. The corporate-level CQI program assigns a "mentor" to provide feedback to the CQI leader or "coach" locally and the senior hospital officer. HCA implemented CQI in each voluntary HCA-affiliated hospital concentrating on three necessary developments. First, the initiation of an organizational structure for CQI. Second, tools for measurement systems and improvements would have to be designed. Last, a change in the basic philosophy of management would have to occur.¹

Establishing the CQI Organizational Structure

Duncan, Fleming and Gallati explain that after the initial training in CQI, HCA would form the hospital CQI council, comprised of senior management in the medical facility, to organize CQI and implement it throughout the institution. The corporate headquarters conducts workshops to teach the senior hospital leaders how to initiate CQI. The formation of CQI teams begins the implementation process, made up of employees closest to or has ownership of the process to be studied. A set of methodological materials and tools are distributed to the teams which includes meeting agendas and roles. The roles include the process action team (PAT) leader who is the owner of the process and not necessarily the manager; the facilitator who keeps the team focused and provides technical support; the timekeeper who controls the time spent on each agenda item; and the recorder.²

The FOCUS-PDCA Cycle Method

Employers at times have a tendency to bypass the analytical phase of CQI and draw seemingly obvious conclusions, especially when they are very close to the process. To avoid against drawing hasty conclusions, HCA developed the FOCUS-PDCA cycle which has also been adopted at the USAF Medical Center, Wright-Patterson. The cycle standardizes the format of the analysis of the process and precludes adoption prematurely of the easiest solution to the improvement of the process. The cycle is comprised of the following nine steps:

FIND. In this initial stage a process is clearly defined to improve by stating its boundaries, customers and the results generated by the process.

ORGANIZE. The next step calls for organizing a team that knows the process who are defined as those who have everyday working knowledge of the process. The leader who will become the "owner" of the quality improvement process must be selected on the basis of knowledge of the process, not on authority over the process. All members of the team must be willing and actively involved with the CQI process.

CLARIFY. A complete current understanding of the process before it can be improved is essential. A detailed flow chart outlining the significant stages of the process is recommended at this step. See illustration of flow chart, Figure 1.

UNDERSTAND. According to Duncan, Fleming and Gallati, this is the most difficult step because it is here one must understand the causes of process variation and the key quality characteristics. Control charts can be used to chart occurrences that are important to the process, such as specific types of defects. Statistical techniques determining an upper and lower control limits are usually selected at three standard deviations from the mean that is less than one percent of random fluctuations from the norm. Outliers can be expected to fall outside this limit.³ (See Figure 2.) Ranking the problems or causes of failure in a vertical bar from left to right in order of frequency of occurrence is called a Pareto diagram. The significance of this graph is that one may determine which areas of failure if

FLOW CHART

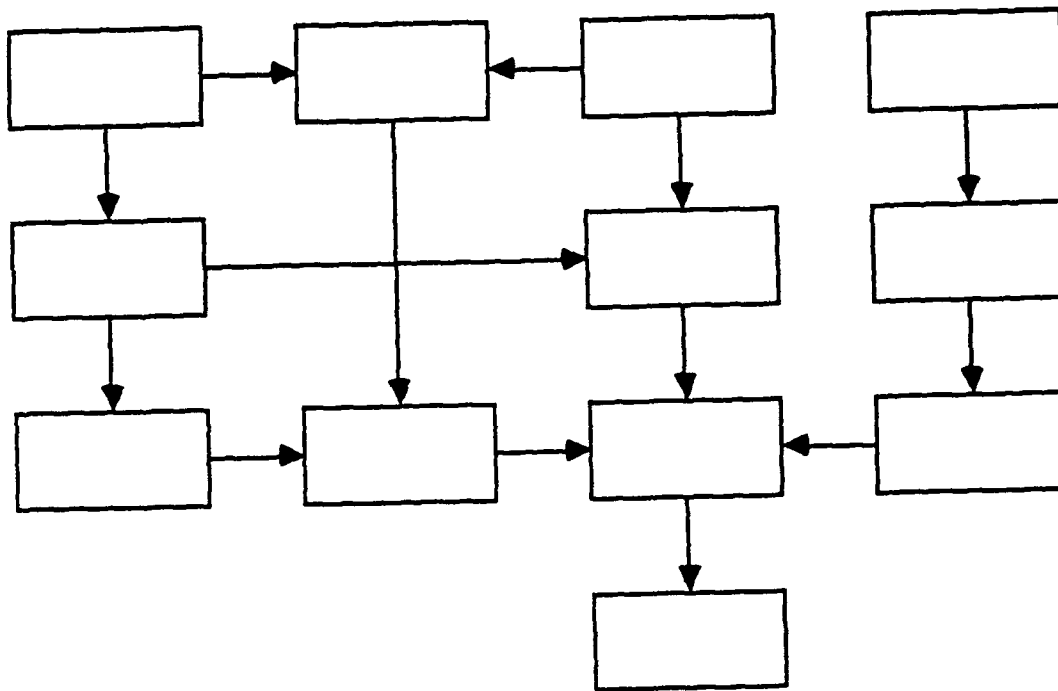


Figure 1: Flow charts are often used as the first step in understanding a process before it can be improved.

CONTROL CHART

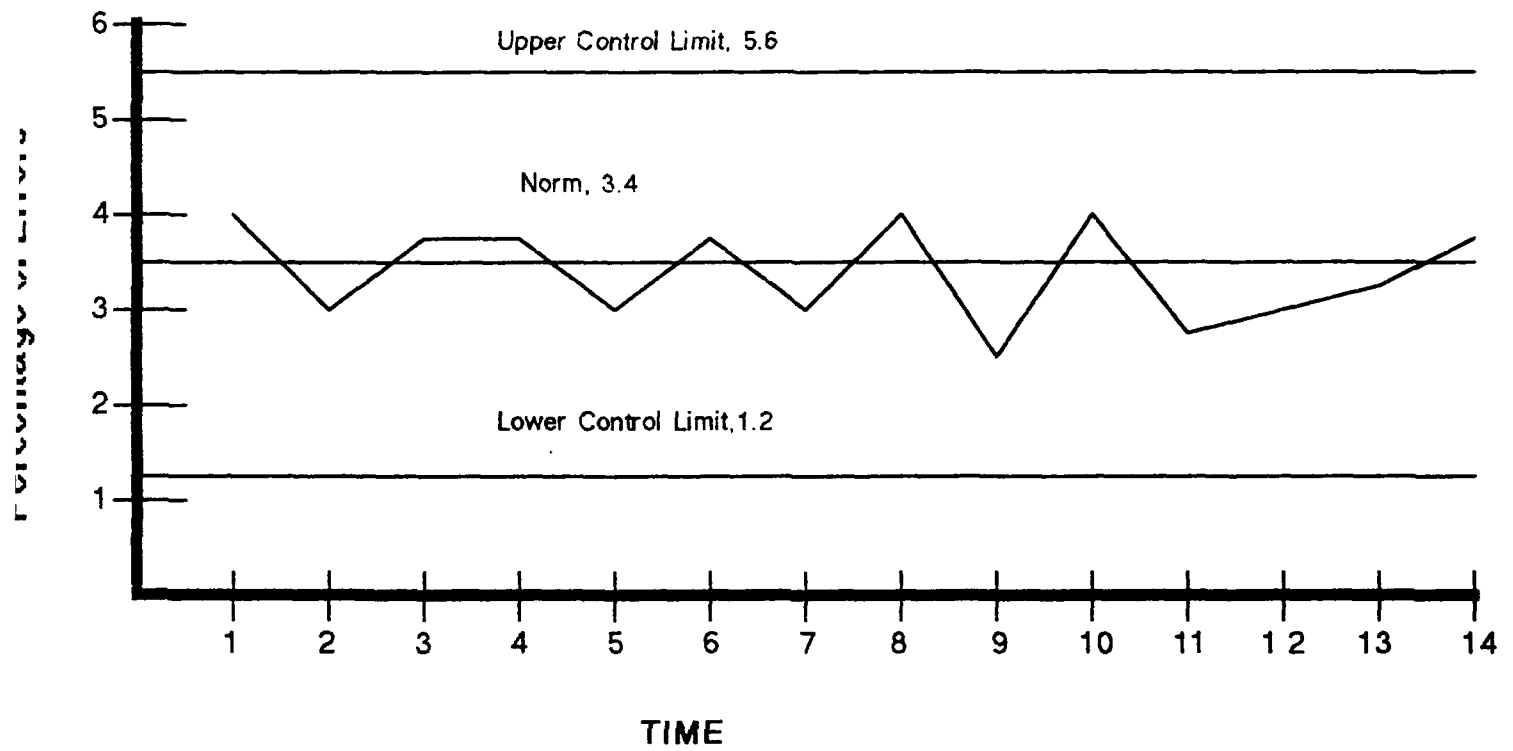


Figure 2: Recording of the percentage of errors vs. time.

corrected could have the greatest percentage of benefits if every problem is not going to or can not be fixed. (See Figure 3.)

SELECT and PLAN. With the help of the analyses gained from the charts, it will be possible to select the best process for improvement. Then plan the implementation of the improvement. Even if the proposed modification is done on a small scale.

DO, CHECK, ACT. Once the data has been collected and analyses completed, then the improvement should be implemented. If studies substantiate that there is a positive change occurring, then the process should be institutionalized. However, if no positive change has occurred, another process or a revisit to the "understand" phase may be in order.

Establishing a Change in Management Philosophy

Duncan, Fleming and Gallati believe that a third requirement for successful CQI implementation is centered around a change in traditional management philosophy. Traditional successful management returns a process, when there is difficulty, to its original state. Thus, the need for the CQI philosophy change with involvement of senior management, teaching by example, to approach CQI opportunities with commitment that results in long-term continuous improvement instead of a temporary fix.⁴ Additionally, training will almost certainly be needed in our medical treatment facility because of limited experience with most of the more rigorous statistical analysis methods. Statistical analysis will have to be adopted by PAT teams because, as previously stated, this is an important aspect of CQI.

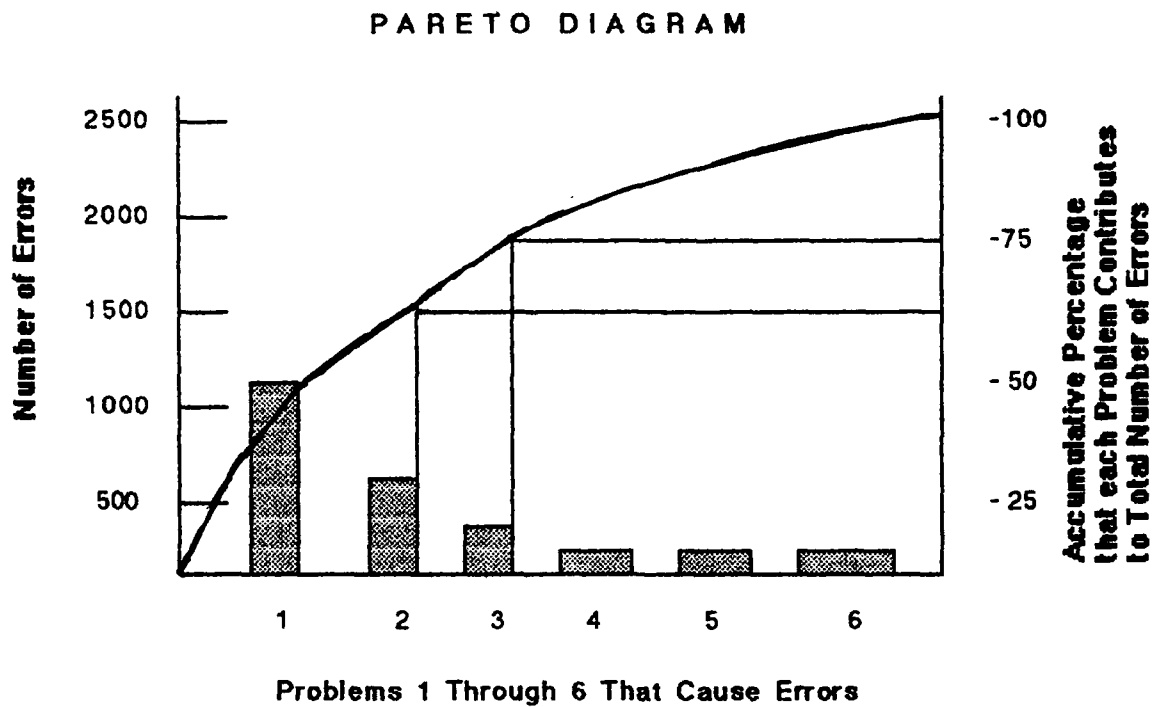


FIGURE 3: This is a diagram of six different problems that caused errors in a process. By concentrating on the first three problems one can demonstrate a 75 percent improvement. Thus, this diagram can be used to determine ones priorities

Some HCA-affiliated hospitals have found it necessary to train their own statistical facilitator for PAT teams.

NOTES

CHAPTER IV

1. Paul Duncan, Eugene Fleming and Todd Gallati, "Implementing A Continuous Quality Program In A Community Hospital," Quality Review Bulletin Journal of Quality Assurance, April 1991, Vol. 17, Number 4, p. 107.
2. Ibid., p. 108.
3. If the average defect rate per event is P and the number of events is N, then the upper and lower controls limits (UCL and LCL) calculated at three standard deviations from the norm (average) defect rate equals:

$$\left. \begin{array}{l} \text{UCL} \\ \text{LCL} \end{array} \right\} = P \pm 3\sqrt{P(1-P)/N}$$

4. Op. Cit., Duncan, p. 110

CHAPTER V

CONCLUSIONS

Clearly, AF medicine will adopt the concepts of continuous quality improvement, eventually, at every level, as the success stories continue to overwhelm us. It takes many years to change the cultural philosophy of doing business in an organization, but it can be done. With the JCAHO pushing our medical facilities and many of our staff who have been exposed to CQI pulling us, the cultural change is already under way. Several of the major commands have strongly encouraged the initiation of the CQI transformation throughout the command, to include the medical treatment facilities. A number of the command surgeon offices have given substantial support to the CQI efforts in the local medical facilities. The USAF medical center at Wright-Patterson AFB has been instrumental in spreading CQI throughout the AF, training representatives from MTF, major commands, and the surgeon general's office. Hospital Corporation of America and naval medicine have institutionalized CQI from the top down, setting up educational centers of excellence in CQI for training purposes. Many of the AF medical facilities fund travel and tuition for their staff to receive this training provided outside of the AF. The medical center at Wright-Patterson AFB, who had developed the experience and expertise, is an appropriate location or a CQI center of excellence. Another option to consider is working out an agreement with the AF Quality Center to place a medical CQI team at the Quality Center, capitalizing on

their expertise. Still, another would be expanding the CQI section at the SG headquarters into a consulting center of excellence in CQI, truly CQI, from top down. Such a center is needed also to assess how we are doing at the MTFs, determining if we are doing more harm than good, with the self-starter programs begun after attending a discussion on CQI and perhaps neglecting to incorporate, for example, a meaningful statistical analysis phase. In order to receive the maximum benefits for our customers and customer suppliers with the potential for recovering a third of the medical budget, AF medicine needs to move cautiously, but decisively, in establishing an AF medical CQI program from top down.

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